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Effect of gold nanoparticles structural variations on mercury removal

Abstract:

In this study gold nanoparticles with different size and shaped were synthesized by different methods in order to observe its capability to remove or adsorb mercury from the prepared solution. The results have showed that various sizes and shapes of gold nanoparticles were obtained using direct synthesis microwave polyol method and seed-mediated growth method. Small sized gold nanoparticles with spherical shapes were obtained by adding NaCl to the gold solution, whereas the seed-mediated growth method produced different shapes of gold nanoparticles with larger particle size. Using the same amount of mercury (20 ppm), the highest mercury removal (13,159 mg/g of gold) was acquired using spherical nanoparticles with particle size less than 10 nm.